Graphene Chemical Sensor

Completed Technology Project (2012 - 2014)

Project Introduction

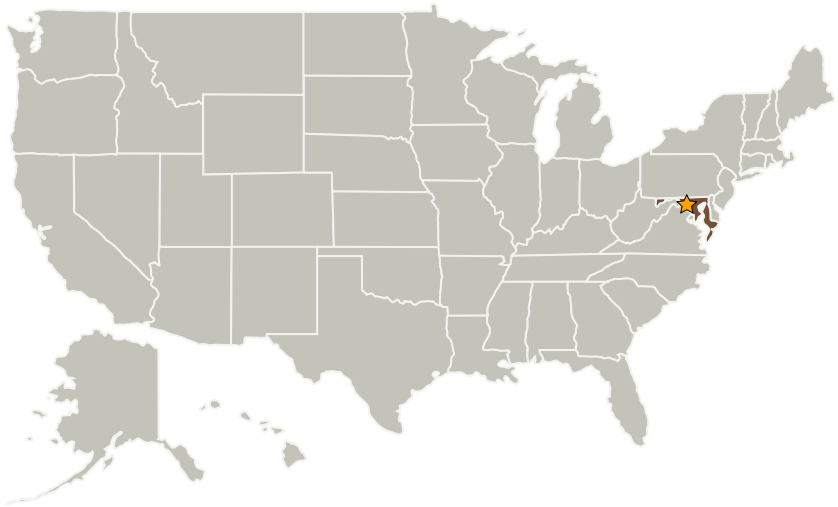
Develop graphene based miniaturized chemical sensors that will be able to detect gaseous and volatile molecules with high sensitivity, good reproducibility and wide operating environment, including extreme conditions.

The sensor uses graphene based devices to sense the surface potential of a graphene channel exposed to an analyte. When analyte molecules adsorb onto the graphene surface, they induce a local change in electrical resistance. This effect is very pronounced in graphene due to the high surface area; high electrical conductivity; and inherent low noise, which makes the changes in resistance detectable.

Anticipated Benefits

N/A

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Innovation Fund: GSFC CIF

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Primary U.S. Work Locations
Maryland

Project Management

Program Director:
Michael R Lapointe

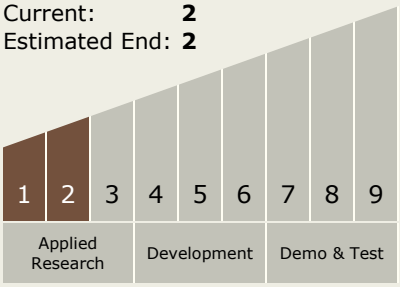
Program Manager:
Peter M Hughes

Project Manager:
Terence A Doiron

Principal Investigator:
Mahmooda Sultana

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.1 Avionics Component Technologies
    - TX02.1.1 Radiation Hardened Extreme Environment Components and Implementations